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ABSTRACT

Teacher educators developed a consortium program between Duquesne University (Pittsburgh, Pennsylvania) and the Pittsburgh (Pennsylvania) Public Schools designed to attract individuals from math and science backgrounds into teaching in an urban setting. The model was formatted to support the certification of individuals who: (1) received a bachelors degree in mathematics, science, engineering, or a related field; (2) sustained employment in industry or research work; and (3) chose to explore a career in teaching. Key program elements include: (1) a year-long teaching program involving student teaching in the fall and a paid half-day teaching position in the spring; (2) provision for state teaching certification in an intern program; (3) continuing support to facilitate each intern's career change decisions, seminars to design career development, and information on the high school curriculum; and (4) specific programs for preparing teachers to teach in urban areas. A brief description is provided of the program. (IAH)

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Thematic Session

Title: "Math and Science Professionals are Becoming Teachers: The Duquesne Model"

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Thematic Area: Research Evaluation

Focus of Proposal: Research/Evaluation

Summary: An EESA Title II sponsored consortium program to certify individuals trained in Mathematics, Science, Engineering on a related field. Includes paid part-time teaching, support for career change decisions, and emphasis on career development and strategies for successful urban teaching.

**"Math and Science Professionals are Becoming Teachers: The Duquesne Model"**

**Abstract:** Based on funding from EESA, Title II, teacher educators developed a consortium program between Duquesne University and the Pittsburgh Public Schools. The model was formatted to support the certification of individuals who, a) received a Bachelor Degree in Mathematics, Science, Engineering or a related field, B) sustained employment in industry or research work, and c) chose to explore a career in teaching. Key program elements include:

1) A year-long teaching program involving fall student teaching and a paid one half time teaching position in the spring;
2) provision for state teaching certification in an "alternate" intern program;
3) continuing support for facilitating each intern's career change decisions, seminars to design career development, information in the high school curriculum;

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4) specific programs for preparing teachers to teach in urban areas.

**Specific Objectives** for the presentation include:

1) review of rational and theoretical basis for developing this program;
2) identification and amplification of career change theory as applied in teacher education;
3) specific analysis of program design elements involved in alternative 5th year intern certification programs, including a review of "collaborative programs";
4) review of current theory involved developing teachers for an urban classroom.

**Content:**

Recent national efforts have addressed the achievement of excellence in public education. These range from stimulating public awareness, seeking parental support, and reshaping the curriculum through focusing on teacher preparation. While each approach has merits, and, in fact, focuses on a necessary course of action, teacher preparation is consistently viewed as a critical component.

National and local reports alike focus on the need for rigorous preparation in the content area. They furthermore highlight, as recently emphasized by the Secretary of Education, the need to attract the most capable into teaching math and science, and emphasize changing the certification process to allow for career changes into teaching from other professions that require math and science competency.

Various national reports recommend augmenting the traditional certification process to allow for career changes into teaching from other professions. If individuals who have majored in mathematics, science, or engineering can be attracted into teaching, they will provide a pool of professionals that may begin to respond to the problem of effective teaching in the content fields. Moreover, if these individuals have worked in industry, military, or research, they will have a greater appreciation for the applications. They will therefore provide a vocational and ultimately motivational component to the elementary and secondary curriculum that is outside the experience of even the most dedicated career teacher.

Leona Tyler's 1985 research indicates that career information can be an educational motivator. accordingly, part of the teacher training should include the career education concept, e.e. incorporation of career development into the curriculum.

Lastly, career change individuals may provide a ready pool of talent, capable of immediately impacting the quality of math and science education. As a correlary, this program developer/researcher developed an extensive, year long study, both quantitative and ethnographic in nature to assess the program component. The program design, research data and resulting analyses, sponsored under ESEA Title II funding, is the substantive basis for the program. Specifically a consortium was formed. What follows describes a restructured teacher education program that allies three teacher education institutions with a major urban school system. The purpose is to attract and develop individuals from math and science backgrounds into teaching in an urban setting.

**PLAN OF ACTION**

In 1985, the Pennsylvania Department of Education widely advertised an "intern" program as a responsible, alternative method for entering the teaching profession. At Duquesne University alone there were 250 documented inquiries into the intern program. Charged with the state endorsement, Duquesne University has developed intern programs to meet the varying needs of individuals.

**PROGRAM DESIGN**

The design of the program considers the time constraints faced by individuals electing to enter the teaching profession at mid-career. It provides the necessary teaching skills, while addressing the psychological adjustments that accompany a career change.

In the Duquesne intern program, students must complete a 4-course, 12 credit sequence. At the conclusion of that sequence, along with meeting state testing requirements, students may either request an intern experience in a local district which approximates a full-time, 15-week experience, or may, as possible, secure employment. If the applicant secures employment, the University provides intensive supervision over the first year. Additionally, meetings are scheduled at the University to address career-development considerations.

Under Title II funding, the University has been able to offer an additional option in its program for career-change individuals wishing to focus on urban teaching. Duquesne is currently involved in a collaborative with the Pittsburgh Public Schools. Within this consortium, each party has specific responsibilities to the professional development of interns.

The essential ingredients of the program include:

A. A $5,000 stipend for students during the fall and spring semester. $5,000 in the fall is provided by a federal grant, and $5,000 in the spring is provided by Pittsburgh Public School payroll.

B. Collaborative development of on-site support programs between the school district and the University.

C. Public school teachers from basic education participating as co-equals with University faculty.

D. An equivalent 1/2 day student teaching, 1/2 day schedule during the fall including supervision from trained Pittsburgh Public School Personnel and University Supervisors.

E. 1/2 day employment during the spring semester with concurrent classes and supervisor support by the University and Pittsburgh Public School Personnel.

F. Research and practice-based perspectives on Urban education.

In addition to the above structure, interns are provided with a)career-change counseling, b)special academic advisement, c) "Content Update Seminars" by public school curriculum specialists, d) inductive support through the public school system, e) regular University advisement. Namely, Pittsburgh has agreed to provide:

1) Half-day student teaching placements for interns;

2) Half-day teaching positions for interns at the rate of $5,000 each;

3) Content updates through its specialized science institute for teacher programs;

4) model induction program for interns.

Duquesne likewise will provide:

1) A course of study leading to qualification for a Pennsylvania intern certificate;

2) A course of study leading to qualification for an Instructional I certificate;

3) A 12-month support seminar designed to address the needs of non-traditional age students in relation to: a) career choice/change; b) self-presentation skills necessary in teaching; c) content knowledge update; d) survival and mastery skills for first year teachers; e) applicable research and pedagogical knowledge and skills relevant to teaching in urban schools.

The purpose of the Intern Program is to develop a better model for enabling individuals trained in a content major at the undergraduate level and with prior work experience to enter the teaching profession.

What follows describes a restructured teacher education program that allies three teacher education institutions with a major urban school system. The purpose is to attract and develop individuals from math and science backgrounds into teaching in an urban setting.

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**SUPERVISION**

Interns from Duquesne University are assigned to Clinical Instructors from the Pittsburgh Public schools. a Clinical Instructor is a title given to teachers trained in Clinical Supervisory skills. However, prior to working with clinical instructors, the interns go through an intensive five-week training program. The instructional areas they are oriented to include:

1) Knowledge of urban child growth and development
2) Knowledge of teaching in their content
3) Human relation skills
4) Knowledge and use of classroom materials
5) Planning and organization skills
6) Instructional delivery skills
7) Classroom management skills

At the termination of the five-week training program, the interns report back to the clinical instructors. They observe, shadow , and confer; generally they become acquainted with the teacher and the students. Initially, the teacher gives the intern the responsibility of one teaching period in their content subject. This responsibility eventually increases to three teaching periods.

While the intern teaches, the clinical instructor writes anecdotal notes of supportive and corrective teaching behaviors exhibited by the intern. The following evaluative procedures are used while the teacher confers with the intern. The intern keeps a log of all sessions and documentation of all corrective and supportive suggestions.

**Technical Feedback Guidelines**

1) Create an environment: Put the intern at ease

2) Describe the outline: Go over the lesson plan

3) Supportive: Ask Questions
   *open ended
   *narrowing — Discussion utilizing analyzed data and impact statements

4) Corrective: Ask Questions
   *open ended
   *narrowing — Discussion utilizing analyzed data and impact statements

5) Solve the problem
   *Identify alternative strategies
   *Select or prescribe strategy to be used

6) Check for understanding: The intern repeats the suggestions

The college supervisor plays a unique role in the clinical observation and evaluation process. The process includes:

1) conferring with the clinical instructor before observing the intern. A discussion of the lesson plans occurs as well as other responsibilities of the intern, i.e., preparation, communication, cooperation.

2) The clinical instructor and the college supervisor observe the intern. Anecdotal notes and documentation of the corrective and supportive behavior are written.

3) After the lesson, strategies are discussed relative to intern feedback. Each takes a turn and addresses the supportive behaviors and then the corrective aspects of the lesson.

4) The technical feedback guidelines approach, previously mentioned, is used.

This entire process takes approximately two forty-two minute periods. Many times it is difficult to confer immediately after each session and it is possible only if there is a free period.

After the first semester of student teaching, and having successfully completed the program,, the intern is placed in a selected Pittsburgh Public school for the second semester.

The new assignment consists of teaching three classes. The renumeration, as previously mentioned, is $5,000. Minimal fringe benefits are also given to the intern. Observations and support by the university supervisor continues during the second semester. The principal and instructional leader in the building also lend support.

After successfully completing the second semester program, the interns are not guaranteed a teaching position by the Pittsburgh Public School district. However, having worked part-time and getting to know personnel certainly gives them an edge over incoming applicants.

The overall reaction of the interns toward the program is excellent. The training program and orientation to urban teaching is unique and an invaluable experience.

**EVALUATION**

To ensure consistent high quality and maintain strong lines of communication among the public school and the community, the Intern Program is annually evaluated and adjusted.

In both individual and small group interviews, interns have expressed a positive commitment toward the teaching profession and this program in particular. Noteworthy was the unyielding sentiment that Pittsburgh City teachers involved were of excellent caliber, and willingly accepted and welcomed the new role in teacher education. The Duquesne students felt that the classroom teachers were pivotal as administrative agents assisting with advice and guidance in the program.

While expressing overall agreement about the program's concept, some students suggested that it may be strengthened by reconfiguring required university courses. Methods and Psychology courses, they contended, should be required early in the experience, while foundations and research courses be offered later in the year. Additionally, all participants agreed that teaching on a daily basis coupled with completion of degree course requirements, while extremely rigorous, was a rewarding blend of practice and theory.

The supervising teachers also expressed positive perceptions. They had high praise for program concept and design, but especially for the quality of the participants. Unanimously, the teachers commented on the outstanding character, maturity, and content knowledge of each student. One high school teacher described his student as, "A bright

and mature person who is bringing real-life experiences into the classroom." This striking comment was typical, and seemed to capture the feelings of all classroom teachers.

The final group to be interviewed was building administrators. Again, each administrator had high praise for both the program and student. They agreed that the intent of the program was correctly targeted and made positive contributions to the schools and profession. The union of a university working with a school to systematically develop new teachers was, they felt, a major step in the right direction for teacher education.

In terms of program structuring, middle school administrators advocated an inductive, sequential approach. They suggested students be "phasesd in" much as one would expect in student teaching with observation, interaction, and teaching in a well-defined timetable. Senior High School administrators, on the other hand, tended to see the program more flexibly and advocated more classroom teacher discretion.

**DISCUSSION**

Facilitating entry into the teaching profession for individuals trained in science, math and engineering, but lacking formal pedagogical training and certification, may be an effective solution to an immediate need. Additionally, preparing teachers for effective work in urban schools is often cited as a priority goal in reports calling for educational programs for developing urban teachers. If these potential trainess can be attracted to urban teaching, and supported through effective on-site programs, they may prove exceptionally well qualified to provide excellent science and math instruction in urban settings. Their experiences in the workplace, superior knowledge of science, maturity, and involvement in career change provide an excellent basis for working with urban youngsters. Their qualifications in science and math earned in academia and on the job ensure mastery of content. A program addressing critical aspects of the urban classroom could enhance effectiveness and provide disadvantaged youngsters increased opportunities to achieve excellence.

One difficult aspect for the individual making the career change is anticipated from career development theory. Donald Super (1988) labels the period, beginning about 30 years of age, as the "Maintenance Period". It is expected that the individual has selected a life's work and will try to make this work permanent. In anticipation of the conflicts within adults making career changes, there seems to be a need for personal assistance regarding how these decisions to change were made. There is also a need to develop perspectives on how these decisions are consistent in the life career patterns. Life planning career development support is an important adjunct to the preparation of those entering the teaching field as a result of mid-life career change.

Over forty-five career change individuals have chosen to participate in the Duquesne version of the intern program since 1985, including 18 in the Pittsburgh intern option. Evaluation has indicated unanimous support for the concept. public school personnel consistently support the qualitative dimensions of the program, indicating that interns are as well prepared as student teachers from other programs. There is consistent evidence that the career background and life experience which intern candidates bring to the classroom has given them an edge in effective and motivational aspects of teaching. University faculty members, interns and public school administrators or teachers overwhelming assign high grades to the program, and enthusiastically welcome the career change person into the teaching profession. Interns report that the combination of learning and teaching provides a concrete and realistic approach to becoming a teacher.

References

Super, Donald E. (1988). Vocational adjustment: implementing a self-concept. Career Development Quarterly, 36, 351-357.

Tyler, Leona E. (1985). A proposal for reorganizing american public education. Unpublished article.